The Monitor

The Newsletter of the ETV Advanced Monitoring Systems (AMS) Center

Volume 6, Number 3 March 2003

Technologies to Detect Ammonia From Animal Agriculture To Be Tested

The Advanced Monitoring Systems (AMS) Center is planning a verification test of technologies that measure ammonia in ambient air. Ammonia emissions can have adverse environmental and health effects, including polluting both the air and water sources. For example, because of its highly reactive nature, ammonia can combine with other atmospheric pollutants to form secondary fine particles and is a major component of $PM_{2.5}$. Ammonia can interact with other forms of air pollution—such as sulfur dioxide—causing acid deposition in waterways and directly on plants. Thus there is significant interest in quantifying ammonia emissions from a variety of sources.

Agricultural activities are a significant source of atmospheric ammonia (NH_3), and waste from livestock accounts for approximately 40 to 50 percent of the global ammonia emissions inventory. The main sources of agricultural NH_3 are urea excreted by animals and urea contained in fertilizer. The reduction of ammonia emissions is one of the components of the U.S. Department of Agriculture's (USDA) Air Quality National Program.

The U.S. Environmental Protection Agency (EPA) and USDA are collaborating in a unified national strategy to minimize the impacts of large concentrations of livestock animal feeding operations (AFOs), especially on water quality and public health. The AFOs pose such risks mainly because of the quantities of manure and wastewater they generate and the resulting pollutants (e.g., nutrients such as nitrogen and phosphorus, organic matter, pathogens, and heavy metals). The USDA is conducting studies to characterize ammonia emissions, including the development of measurement tools to quantify these emissions from AFOs and other sources.

The planned verification test will gauge how well the technologies monitor ammonia from agricultural sources. Partners are also being sought to collaborate with EPA and Battelle on this verification test. Vendors with technologies that can detect ammonia in ambient air in concentrated feeding or open grazing operations are invited to participate in this verification test. Interested vendors and partners should contact Ken Cowen, 614-424-5547 or cowenk@battelle.org.

Verification Test Updates

Ambient Ammonia Sensors. Vendors and partnering organizations are being sought for this verification category (please see main article). Contact Ken Cowen, 614-424-5547 or cowenk@battelle.org.

Ammonia continuous emission monitors (CEMs). Several vendors are expected to participate in the verification of the performance of technologies that detect ammonia "slip" emissions. Testing will take place first at a coal-fired power plant and later at a natural gas-fired plant. The Electric Power Research Institute (EPRI) is collaborating with Battelle on the first test, which will likely be conducted in May and June. Contact Ken Cowen, 614-424-5547 or cowenk@battelle.org.

Mercury CEMs. Five mercury CEMs were tested in a Phase 2 verification test during August and September at the U.S. Department of Energy's Toxic Substances Control Act Incinerator (TSCAI) at Oak Ridge. The data have been analyzed and verification test reports are being drafted. Contact Tom Kelly, 614-424-3495 or kellyt@battelle.org.

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The AMS Center, which is part of the U.S. Environmental Protection Agency's Environmental Technology Verification Program, verifies the performance of technologies that monitor for contaminants and natural species in air, water, and soil. ETV was established to accelerate the implementation of improved environmental technologies through third-party verification testing and reporting of the technologies' performance. The ETV process provides purchasers and permitters with an independent assessment of the technology they are buying or permitting and facilitates multi-state acceptance. For further information, contact Helen Latham at Battelle, 505 King Ave., Columbus, Ohio 43201-2693; Phone 614-424-4062; Fax 614-424-5601; E-mail lathamh@battelle.org.

Updates *(from Page 1)*

Multi-parameter water probes. Two vendors participated in the test conducted in collaboration with the National Oceanic and Atmospheric Administration's (NOAA) Center for Coastal Environmental Health and Biomolecular Research in Charleston, SC. The probes were tested in both salt and fresh water during a three-month field period. Draft reports are being reviewed. A second test of these technologies is being planned. Contact Jeff Myers, 614-424-7705 or myersjd@-battelle.org.

Portable cyanide detectors for water. The verification reports for six cyanide detectors have been drafted and are being reviewed. Contact Ryan James, 614-424-7954 or jamesr@battelle.org.

Portable multi-gas emission analyzers. The final report for the technology tested in the first round has been reviewed by peer reviewers and sent to EPA for signature. A second verification test of portable multi-gas emission analyzers that measure the instruments' capabilities to detect NO/NO_2, SO_2, CO, and O_2 in combustion emissions is being scheduled. Vendors interested in submitting technologies should contact Jeff Myers, 614-424-7705 or myersjd@battelle.org.

Portable water analyzers for arsenic. Five portable arsenic water analyzers were tested in January and February, the second round of verification testing for the category. Reports are being drafted for review. A third round of this verification test is planned. For information about the upcoming test, contact Patricia White, 781-952-5279 or whitepj@battelle.org.

Test kits for pesticides in water. Vendors are being solicited for this verification category. The verification test is being planned for late summer. For information about the upcoming test, contact Patricia White, 781-952-5279 or whitepj@battelle.org.

Rapid toxicity monitors. A verification test for this technology category is being planned. Contact Ryan James, 614-424-7954 or jamesr@battelle.org.

Real-Time Ambient Particulate Monitors. Vendors are being sought for a second round of testing in this verification category. Nephelometers may be included in this test. Contact Darrell Joseph, 614-424-3645 or josephd@battelle.org.

Five Japanese representatives met with Karen Riggs, manager of Battelle's AMS Center, and toured several of Battelle's testing laboratories

Japanese Scientists Visit AMS Center To Help Develop Similar ETV Program

Five representatives from Japan, including two from the Ministry of the Environment, visited the AMS Center in March to collect information to help develop their nation's environmental technology verification program. The visitors toured facilities and received information about starting a similar program from Karen Riggs, who manages the AMS Center.

A year ago, the Japanese scientists visited the EPA's ETV Program Office and Battelle facilities to learn about the goals and outcomes of the EPA's ETV program and to determine whether a similar program could be useful in their country. During the latest visit, the Japanese representatives announced that their program is to start in April with a pilot phase, which will stress the use of private sector companies and identify technology categories for testing.

Initially the Japanese program will focus on innovative monitoring technologies for wastewater treatment and technologies that prevent atmospheric contamination. Japan's formal ETV program is scheduled to begin in 2008.

In February, Ms. Teresa Harten, ETV's program director, presented background information and an update about EPA's ETV Program at the International Symposium in Japan.

How Vendors Can Participate and Benefit

To participate in the AMS Center's verification tests, vendors need to have:

- a commercially available technology,
- the willingness to cost-share a portion of the testing costs,
- available staff to participate in developing the verification test, and
- a commitment to deploy and/or operate the technology during the verification test.

The benefits to technology developers and vendors of participating in a verification test include:

- a rigorous test protocol,
- objective performance data collected under realistic operating conditions,
- dissemination of technology information through well-developed information and outreach materials provided by the ETV Program and AMS Center, and
- opportunity for accelerated acceptance of the technology by buyers and permitters.